

CLAIM(S)What is claimed is :

- 5 1. A melt spinning process for spinning polymeric  
filaments, comprising  
passing a polymeric melt of a polymer formed from one  
or more chain-branching agents through a spinneret to  
form polymeric filaments,  
10 passing the filaments to a pneumatic quench zone,  
wherein a cooling gas is provided to the filaments to  
cool the filaments, wherein the cooling gas is directed  
to travel in the same direction as the direction of the  
filaments.
- 15 2. A process as claimed in claim 1, wherein the  
cooling gas is provided to the filaments in a single  
stage and passes through a tapered section and a zone  
of restricted dimensions to accelerate the gas.
- 20 3. A process as claimed in claim 1, wherein the  
cooling gas is provided to the filaments in two stages,  
and wherein the gas is accelerated by a converging  
section in the quench zone.
- 25 4. A process as claimed in claim 1, further  
comprising gathering the filaments to form a yarn.
- 30 5. A process as claimed in claim 1, wherein the  
polymer comprises a polyester.
6. A process as claimed in claim 1, wherein the  
polymer comprises polyethylene terephthalate.

7. A process as claimed in claim 1, wherein the chain branching agents comprise a tri or higher functional acid, alcohol, or ester.

5 8. A process as claimed in claim 1, wherein the chain branching agent comprises trimethyl trimellitate.

9. A process as claimed in claim 1, wherein a yarn formed from the produced filaments has a denier spread  
10 of less than about 2 and the filaments have a denier per filament of greater than about 4.

10. A process as claimed in claim 1, wherein a yarn formed from the produced filaments has a denier spread  
15 of less than about 1.5 and a denier per filament of less than about 4.

11. A process as claimed in claim 1, wherein the polymer has a laboratory relative viscosity of above  
20 22.

12. A process as claimed in claim 1, wherein the filaments travel through the quench zone at a speed of greater than about 3,500 meters per minute.

25 13. A process as claimed in claim 1, wherein the filaments travel through the quench zone at a speed of greater than about 4,000 meters per minute.

30 14. Filaments produced by the process of claim 1.

15. An article formed from the filaments of claim 14.

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passing a polymeric melt of a polymer through a spinneret to form polymeric filaments having a denier  
5 per filament above about 4,

whereby a yarn formed from the produced filaments has a denier spread of less than 2.

18. A melt spinning process as claimed in claim 16,  
wherein the polymer comprises polyethylene  
20 terephthalate.

25        passing a polymeric melt of a polymer having a  
laboratory relative viscosity above 22.5 through a  
spinneret to form polymeric filaments,

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20. A method of producing polyester yarn have a denier spread of less than about 2%, comprising forming filaments from a polyester containing one or more chain-branching agents having a laboratory relative viscosity above 22.5, and forming the filaments into a yarn.
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